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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/281,831	03/30/1999	YU-CHOONG TAI	06618/425001	7686

20985 7590 11/20/2002  
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EXAMINER

PEREZ, GUILLERMO

ART UNIT PAPER NUMBER

2834

DATE MAILED: 11/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/281,831

Applicant(s)

TAI ET AL.

Examiner

Guillermo Perez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 16-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-5 is/are allowed.
- 6) ☒ Claim(s) 6 and 16-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 6, 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brailsford (U. S. Pat. No. 4,475,068) in view of Bornand (U.S. Pat. No. 5, 605, 614) and further in view of Tai et al. (U. S. Pat. No. 6,094,116).

Brailsford discloses a DC motor comprising:

a plurality of windings;

at least one relay connected electrically to at least one of the windings and to power, and

a magnetic rotor having at least one pole positioned to induce a magnetic field in each relay when passing by the relay. Brailsford discloses that the windings (21-24) are arranged in pairs of primary and secondary windings (21-22 and 23-24) and each relay (37-38) connects to a corresponding one of the pairs of windings (21-24).

Brailsford discloses that the secondary windings (21 and 23) all connect to a common node (41) and each of the primary windings (22 and 24) connects to the corresponding relay (37-38).

However, Brailsford does not disclose at least one microelectronic mechanical system (MEMS) relay. Brailsford does not disclose that each relay includes:

at least one substrate formed from a nonconductive or semiconductive material;  
a springing beam etched on the substrate, the springing beam being directly connected to the substrate, where the springing beam is formed of permalloy material;  
and

two electrically conductive elements, one formed on the springing beam, that together define at least two switching states, including an open state in which the conductive elements are physically separated from each other, and a closed state in which the conductive elements physically contact each other; where

the springing beam includes a magnetic material which, in the presence of a magnetic field, creates an actuation force that causes the electrically conductive elements to apply power to or remove power from at least one of the windings by switching from one of the switching states to another of the switching states.

Bornand discloses at least one microelectronic mechanical system (MEMS) relay. Bornand discloses that each relay includes:

at least one substrate (1) formed from a nonconductive or semiconductive material;

a springing beam (5) etched on the substrate (1); and

two electrically conductive elements (12,13,2), one formed on the springing beam (12,13), that together define at least two switching states, including an open state in which the conductive elements are physically separated from each other (figure 1), and

a closed state in which the conductive elements physically contact each other (figure 2);  
where

the springing beam (5) includes a magnetic material (14) which, in the presence of a magnetic field (16), creates an actuation force that causes the electrically conductive elements (12,2) to apply power to or remove power by switching from one of the switching states to another of the switching states. Bornand's invention have the purpose of miniaturizing the electrical circuits to be opened and closed in an electrical system.

Tai et al. disclose that the springing beam (6) is directly connected to the substrate (2 through the base 4 of the springing beam in figures 1C, 1D, 1E). Tai et al. disclose that the springing beam (6) is formed of permalloy material (column 5, lines 12-17). The invention of Tai et al. have the purpose of providing a high magnetic permeability in the magnetic circuit.

It would have been obvious at the time the invention was made to modify the DC motor of Brailsford and provide it with the relay, substrate and springing beam materials, and contacts functions disclosed by Bornand, and the mounting configuration and materials disclosed by Tai for the purpose of miniaturizing the electrical circuits to be opened and closed in an electrical system, and providing a high magnetic permeability in the magnetic circuit.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the magnetic actuation plate/springing beam of a permalloy material since it has been held to be within the general skill of a worker in the

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art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

2. Claims 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brailsford in view of Bornand and further in view of Tai et al. as applied to claim 6 above, and further in view of Tanikoshi (U.S. Pat. No. 3, 900, 780).

Brailsford, Bornand and Tai et al. substantially teaches the claimed invention except that it does not show that the motor is a three-phase motor. Neither Brailsford, Posey, Bornand nor Tai et al. disclose that the motor includes three relays separated from each other by approximately 120°.

Tanikoshi discloses that the motor is a three-phase motor (figure 7); and that the motor includes three relays separated from each other by approximately 120° (column 5, lines 40-49) for the purpose of controlling, with a higher degree of accuracy, the switching operations of the magnetic - sensitive elements.

It would have been obvious at the time the invention was made to modify the DC motor of Brailsford, Bornand and Tai et al. and provide it with the three-phase motor including the three relays arrangement disclosed by Tanikoshi for the purpose of enhancing the switching operations of the relays during rotation of the motor rotor.

#### ***Allowable Subject Matter***

Claims 1-5 were previously allowed.

#### ***Response to Arguments***

Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

In response to Applicants remark that Tai fails to disclose that the "springing beam directly connected to the substrate" it must be noted that Tai discloses those limitations in figures 1C, 1D, and 1D. The springing beam 6 is connected directly to the substrate 2.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Perez whose telephone number is (703) 306-5443. The examiner can normally be reached on Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308 1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3432 for regular communications and (703) 305 3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

Guillermo Perez  
November 14, 2002

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